

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants : Shaily Verma et al.
Serial No. : 10/517,132
Filed : December 6, 2004
For : INTERNETWORKING BETWEEN WLAN AND A
MOBILE COMMUNICATIONS SYSTEM
Examiner : Roberta A. Shand
Art Unit : 2616
Conf. No. : 6857

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APPEAL BRIEF

The Appellants herewith submit this Appeal Brief to the Board of Patent Appeals and Interferences, on appeal from the decision of the Examiner dated 12 November 2009, rejecting Claims 1-27. The fee for this Brief has been previously paid.

(certificate of mailing)

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Real Party in Interest

The real party in interest is:

Thomson Licensing S.A.
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France,

as shown by an assignment recorded on 6 December 2004 at Reel/Frame
017278/0603.

Related Appeals and Interferences

A previous appeal was terminated by the Examiner's withdrawal of a Final Rejection dated 24 October 2008. The Appellants assert that no other appeals or interferences are known to the Appellants, the Appellants' legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-27, all of the pending claims, have been rejected.

The subject matter of all claims was commonly owned by the Assignee at the time of the invention.

No amendment has been filed since 7 July 2008.

The rejection of Claims 1-27 is appealed.

Claims 1-4, 7- 9, 11-18, and 21-27, stand rejected under 35 USC 103(a) as unpatentable over US 2002/0181468 to Lucidarme et al in view of US 2006/0291455 to Katz et al.

Claims 5, 6, 10, 19 and 20 stand rejected under 35 USC 103(a) as unpatentable over Lucidarme et al in view of Katz et al and US 7,054, 945 to Hurttta et al.

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Status of Amendments

All amendments to the Claims have been entered.

Summary of Claimed Subject Matter

Independent Claim 1 relates to a method for supporting an interworking between a Wireless Local Area Network WLAN and a mobile communications system (page 2, lines 17 to 19) the mobile communications system having a first Support Node (SGSN 135, page 5, lines 10 -11) for interfacing a radio access network (UTRAN 165) to a core network (170) (page 5, lines 19 - 21) and a second Support Node (140) for interfacing the mobile communications system to a second communications system (145, Figure 1), the method comprising the steps of:

providing an interworking function IWF (105, page 4, line 32) associated with the WLAN (110, page 5, lines 5 - 9) and coupled to the mobile communications system (165);

establishing at least one Tunneling Protocol- User plane tunnel (199, page 7, lines 13 - 14) between the IWF and the second support node (140) for transferring data signals (page 6, lines 24 - 25); and

establishing at least one Tunneling Protocol - Control plane tunnel (198) between the first Support Node (135) and the second Support Node (140) for transferring control signals (page 7, lines 11-12).

Independent Claim 15 relates to an apparatus for supporting an interworking between a Wireless Local Area Network WLAN and mobile communications network (165, page 3, lines 17-18), the mobile communications network having a first Support Node (SGSN 135, page 5, lines 10-11) for interfacing a radio access network (UTRAN 165) to a core network (170, page 5, lines 19 -21) and a second Support Node (140) for interfacing the mobile communications system to a second communications system (145, Figure 1), the interworking being facilitated by an InterWorking Function IWF (105, page 4, line 32), the apparatus comprising:

means for establishing at least one Tunneling Protocol-User plane tunnel (199, page 7, lines 13-14) between the IWF and the second support node (140, for transferring data signals (page 6, lines 24-25); and

means for establishing at least one Tunneling Protocol-Control plane tunnel (198) between the first Support Node (135) and the second Support Node (140) for transferring control signals (page 7, lines 11-12).

Independent Claim 23 relates to a mobile terminal (120) comprising:

means for forwarding an associate request to an access point (110, page 8, lines 7-9) of a wireless local area network;

means for receiving an associate response from said access point (110) of said wireless local area network (page 8, lines 10-11);

means for registering a wireless local area network coverage area as a new routing area (page 8, lines 22-23);

means (199) for establishing data communications between said mobile terminal (120) and a gateway general packet radio service (GPRS) support node (140, page 9, lines 5-9), and

means (198) for establishing signaling communications between said mobile terminal (120) and a gateway general packet radio service GPRS support node (140) via universal mobile telecommunications system UMTS terrestrial radio access network (165) and a serving GPRS support node (140, page 9, line 30 to page 10, line 7).

Grounds of Rejections to be Reviewed on Appeal

1. Whether Claims 1-4, 7- 9, 11-18, and 21-27, are patentable under 35 USC 103(a) over US 2002/0181468 to Lucidarme et al in view of US 2006/0291455 to Katz et al.

2. Whether Claims 5, 6, 10, 19 and 20 are patentable under 35 USC 103(a) over Lucidarme et al in view of Katz et al and US 7,054, 945 to Hurtta et al.

Argument

This invention relates to a method, apparatus, and mobile terminal, using a wireless local area network (WLAN) and an interworking function (IWF). Data is transferred through the interworking function, while control signals are transferred between support nodes. In this way, data is transferred using the high-speed capabilities of a wireless local area network, while control signals are handled in a manner which facilitates billing.

(1) Rejection of Claims 1-4, 7- 9, 11-18, and 21-27 Under 35 USC 103(a)

The Examiner has rejected Claims 1-4, 7- 9, 11-18, and 21-27 as being unpatentable over US 2002/0181468 to Lucidarme et al in view of US 2006/0291455 to Katz et al. The Examiner has asserted that fig. 1 of Lucidarme et al teaches “supporting an interworking a mobile communications system”. The Appellants can not agree. Figure 1 of Lucidarme et al shows a system for communication between mobile terminals 23 and internet 12 using a cellular system 20. Nowhere does Lucidarme et al show or suggest:

“establishing at least one tunneling protocol - user plane tunnel between the IWF and the second support node for transferring data signals; and

establishing at least one tunneling protocol - control plane tunnel between the first support node and the second support node for transferring control signals”,

as specifically recited in Claim 1. Rather, Lucidarme et al processes data signals and control signals along the same path.

Katz et al is similar to Lucidarme et al in processing data signals and control signals along the same path. It is therefore clear that even if the structure of Katz et al were to be added to the structure of Lucidarme et al, the patentability of Claim 1 would not be affected.

Claims 2-4, 7-9 and 11-14 are dependent from Claim 1 and add further advantageous features. The Appellants submit that these subclaims are patentable as their parent Claim 1.

Similarly, nowhere does Lucidarme et al show or suggest:

“means for establishing at least one tunneling protocol - user plane tunnel between the IWF and the second support node for transferring data signals; and

means for establishing at least one tunneling protocol - control plane tunnel between the first support node and the second support node for transferring control signals”,

as specifically set forth in Claim 15. Even if the structure of Lucidarme et al were to be combined with the structure of Katz et al, the patentability of Claim 15 would not be affected, since neither Lucidarme et al nor Katz et al provide different paths for data signals and control signals.

Claims 16-18, 21 and 22 are dependent from Claim 15 and add further advantageous features. The Appellants submit that these subclaims are patentable as their parent Claim 15.

Similarly, nowhere does either Lucidarme et al or Katz et al show or suggest:

“means for establishing data communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via an inter-working function; and

means for establishing signaling communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via a universal mobile telecommunications system (UMTS) terrestrial radio access network and a serving GPRS support node”,

as specifically recited in Claim 23. As pointed out above, neither Lucidarme et al nor Katz et al provide separate paths for data communications and signaling communications. It is therefore clear that neither Lucidarme et al nor Katz et al affect the patentability of Claim 23.

Claims 24-27 are dependent from Claim 23 and add further advantageous features. The Appellants submit that these subclaims are patentable as their parent Claim 23.

(2) Rejection of Claims 5, 6, 10, 19 and 20 Under 35 USC 103(a)

The Examiner has additionally cited US 7,054,945 to Hurтта et al against subclaims 5, 6, 10, 19, and 20. Hurтта et al relates to a technique for providing an announcement in a 3G network. Nowhere does Hurтта et al show or suggest any interworking between a WLAN and a mobile communications system, using an interworking function. Nowhere does Hurтта et al establish a Tunneling Protocol-User plane tunnel, nor a Tunneling Protocol-Control plane tunnel, as set forth in parent Claim 1. The Applicants therefore submit that Hurтта et al does not affect the patentability of subclaims 5, 6, and 10, which are dependent from Claim 1. Furthermore, nowhere does Hurтта et al show or suggest an Interworking Function, a Tunneling Protocol-User plane tunnel between an interworking function and a second support node for transferring data signals, and a Tunneling Protocol-Control plane tunnel, as set forth in parent Claim 15. The Applicants therefore submit that Hurтта et al does not affect the patentability

of subclaims 19 and 20, which are dependent from Claim 15. The Appellants therefore submit that:

- a) Dependent Claims 2 -14 are patentable as their parent Claim 1;
- b) Dependent Claims 16 – 22 are patentable as their parent Claim 15; and
- c) Dependent Claims 24 - 27 are patentable as their parent Claim 23.

The Appellants therefore submit that the Examiner's rejection is improper, and should be reversed. A decision to that effect is respectfully solicited.

Respectfully submitted,
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Claims Appendix

1. A method for supporting an interworking between a Wireless Local Area Network (WLAN) and a mobile communications system, the mobile communications system having a first Support Node for interfacing a radio access network to a core network and a second Support Node for interfacing the mobile communications system to a second communications system, the method comprising the steps of:

providing an interworking function (IWF) associated with the WLAN and coupled to the mobile communications system;

establishing at least one Tunneling Protocol – User plane tunnel between the IWF and the second Support Node for transferring data signals; and

establishing at least one Tunneling Protocol – Control plane tunnel between the first Support Node and the second Support Node for transferring control signals.

2. The method of claim 1, wherein the mobile communications network comprises a UMTS network, the first Support Node comprises a Serving General Packet Radio Service (GPRS) Support Node (SGSN), the second Support Node comprises a Gateway GPRS Support Node (GGSN), the Tunneling Protocol - User plane tunnel comprises a GPRS Tunneling Protocol - User Plane (GTP-U) tunnel, and the Tunneling Protocol - Control Plane tunnel comprises a GPRS Tunneling Protocol - Control Plane (GTP-C) tunnel.

3. The method of claim 2, wherein the IWF is configured as a logical SGSN with respect to the data signals.

4. The method of claim 2, wherein said step of establishing the at

least one GTP-U tunnel comprises the step of defining a GTP tunnel in a GTP-U for at least one Packet Data Protocol (PDP) context in at least one of the GGSN and the IWF.

5. The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one Radio Access Bearer (RAB).

6. The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one Packet Data Protocol (PDP) context with a same PDP address and Access Point Name (APN) for tunnel management messages.

7. The method of claim 2, wherein a GTP-C carries GPRS mobility management functions.

8. The method of claim 2, further comprising the step of providing access to both the WLAN and the mobile communications system through a single point of attachment consisting of the GGSN.

9. The method of claim 2, wherein the Core Network includes, the GGSN and the SGSN, and the method further includes the step of maintaining a connection between a User Equipment (UE) and the CN while diverting data to the UE through the at least one GTP-U tunnel between the GGSN and the IWF.

10. The method of claim 2, wherein the mobile communications network comprises a Radio Network Controller (RNC) and the IWF is disposed on a WLAN side of the interworking, and the step of establishing

the at least one GTP-U tunnel couples the IWF of the WLAN to the GGSN of the mobile communications network while bypassing the RNC and the SGSN of the mobile communications network.

11. The method of claim 2, further comprising the steps of:
authenticating a User Equipment (UE) by the mobile communications network;
communicating a result of said authenticating step to the IWF through the GGSN.

12. The method of claim 2, further comprising the steps of:
registering a WLAN coverage area as a different Routing Area (RA) with the mobile communications network; and
specifying an IWF address and Tunnel Endpoint Identifiers (TEIDs) for said step of establishing the at least one GTP-U tunnel, when one of a Packet Data Protocol (PDP) request of a modify PDP request is received from a User Equipment (UE).

13. The method of claim 2, further comprising the steps of:
employing the GGSN as a Foreign Agent (FA) to handle UE mobility;
and
informing the SGSN to establish the at least one GTP-U tunnel.

14. The method of claim 2, further comprising the step of employing encryption used by the mobile communications network for a user connecting to the WLAN.

15. An apparatus for supporting an interworking between a Wireless Local Area Network (WLAN) and mobile communications network,

the mobile communications network having a first Support Node for interfacing a radio access network to a core network and a second Support Node for interfacing the mobile communications system to a second communications system, the interworking being facilitated by an InterWorking Function (IWF), the apparatus comprising:

means for establishing at least one Tunneling Protocol – User plane tunnel between the IWF and the second Support Node for transferring data signals; and

means for establishing at least one Tunneling Protocol – Control plane tunnel between the first Support Node and the second Support Node for transferring control signals.

16. The apparatus according to claim 15, wherein the first Support Node comprises Serving General Packet Radio Service (GPRS) Support Node (SGSN), the second Support Node comprises Gateway GPRS Support Node (GGSN), the Tunneling Protocol – User plane tunnel comprises a GPRS Tunneling Protocol – User plane (GTP-U) tunnel, and the Tunneling Protocol – Control plane (GTP-C) tunnel.

17. The apparatus of claim 16, wherein the IWF is configured as a logical SGSN with respect to the data signals.

18. The apparatus of claim 16, wherein said means for establishing the at least one GTP-U tunnel comprises means for defining a GTP tunnel in a GTP-U for at least one Packet Data Protocol (PDP) context in at least one of the GGSN and the IWF.

19. The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in

a GTP-C for at least one Radio Access Bearer (RAB).

20. The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in a GTP-C for at least one Packet Data Protocol (PDP) context with a same PDP address and Access Point Name (APN) for tunnel management messages.

21. The apparatus of claim 16, wherein a GTP-C carries GPRS mobility management functions.

22. The apparatus of claim 16, further comprising means for providing access to both the WLAN and the mobile communications network through a single point of attachment consisting of the GGSN.

23. A mobile terminal, comprising:
means for forwarding an associate request to an access point of a wireless local area network;
means for receiving an associate response from said access point of said wireless local area network;
means for registering a wireless local area network coverage area as a new routing area;
means for establishing data communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via an inter-working function; and
means for establishing signaling communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via a universal mobile telecommunications system (UMTS) terrestrial radio access network and a serving GPRS support node.

24. The mobile terminal according to claim 23, wherein said means for registering a wireless local area network coverage area as a new routing area comprises forwarding a packet data protocol context request to said serving GPRS support node.

25. The mobile terminal according to claim 23, wherein said means for registering a wireless local area network coverage area as a new routing area comprises forwarding a modify packet data protocol context request to said serving GPRS support node.

26. The mobile terminal according to claim 24, wherein said means for registering a wireless local area network coverage area as a new routing area further comprises means for receiving a packet data protocol context accept response from said serving GPRS support node.

27. The mobile terminal according to claim 24, wherein said means for registering a wireless local area network coverage area as a new routing area further comprises receiving a modified packet data protocol context accept response from said serving GPRS support node.

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Evidence Appendix

None

Related Proceedings Appendix

The Appellants assert that, other than the previous appeal, no other proceedings are known to the Appellants, the Appellants' legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.